

Application No.: 10/692,588

Docket No.: JCLA10198

REMARKS**Present Status of the Application**

The Office Action rejected presently-pending claims 1-14. Applicant thanks the Examiner for the consideration given the present application. Applicants have amended independent claims 1 and 7, and the dependent claim 8 to overcome the rejections and to improve clarity. Figure 4 of the present invention fully supports this amendment. No new matter has been introduced to the application by the amendments made herein. After entry of the foregoing amendments, claims 1-14 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Summary of Applicant's Invention

The Applicant's invention is directed to an evaporation method and an apparatus thereof for improving the uniformity of a film deposited on a substrate. More specifically, in the evaporation method and the evaporation apparatus, a source supply device supplies an evaporation source to a heater along a supplying direction. It should be noticed that **there is a vector from the source supplying device to the heater along the supplying direction and the projection of the vector on the planar of the substrate is parallel to a line which is a tangent to a point on a circular trace defined by the center of the substrate, wherein the point on the circular trace on the substrate is located right above the heater.**

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Discussion of Office Action Rejections

The Office Action rejected claims 1-14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In response thereto, Applicants have amended claims 1, 7 and 8 to overcome this rejection. Thus, after entry the foregoing amendments, reconsideration of claims 1-14 is respectfully required.

The Office Action rejected claims 1, 4-7 and 11-13 under 35 U.S.C. 102(e) as anticipated by or, in alternative, under 35 U.S.C. 103(a) as obvious over Hatwar (U.S. 6,676,990). Also, the Office Action rejected claims 1-14 under U.S.C. 103(a) as being unpatentable over Connell (U.S. 4,310,614) or Bergfelt (U.S. 4,222,345) taken in view of Phinney (U.S. 4,791,261), Hatwar, Dobson (U.S. 3,797,452) and/or Nozaki (JP 59-133366). The Office Action rejected claims 1, 4-7 and 11-14 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tochishita (U.S. 6,280,792). The Office Action rejected claims 1-8 and 11-14 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Vignola (U.S. 5,622,564). The Office Action rejected claims 1-14 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Carpenter (U.S. 3,750,623).

Applicants have amended claims 1 and 7 to clearly define the method according to the present invention and respectfully traverse these rejections. As amended, claims 1 and 7 recite:

Claim 1. An evaporation method, comprising:

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providing a substrate, wherein the substrate is rotating along an axis at the center of the substrate and perpendicular to the plane of the substrate;

defining a circular trace by using the center of the substrate as the center of the circular trace;

providing a heater right under a point on the circular trace, wherein there is a line on the plane of the substrate as a tangent to the point on the circular trace;

providing a source supplying device, wherein the source supplying device supplies an evaporation source to the heater along a supplying direction and there is a vector from the source supplying device to the heater along the supplying direction;

adjusting the supplying direction of the source supplying device so that a projection of the vector on the plane of the substrate is parallel to the line; and

heating the evaporation source by the heater for evaporation.

Claim 7. An evaporation apparatus for depositing a film on a substrate, the evaporation apparatus comprising:

a rotator driving the substrate to be rotating along an axis at the center of the substrate to define a circular trace;

a heater, disposed right under a point on the circular trace, wherein there is a line on the plane of the substrate as a tangent to the point on the circular trace; and

a source supplying device, disposed over the heater, wherein the source supplying device supplies an evaporation source to the heater along a supplying direction and there is a vector from the source supplying device to the heater along the supplying direction and a projection of the vector on the plane of the substrate is parallel to the line.

(Emphasis added). Applicants submit that claims 1 and 7 patently define over the cited arts for at least the reason that the cited art fails to disclose at least the features emphasized above. Meanwhile, the prior-art references do not contain any suggestion (express or implied) that they be combined, or that they be combined in the manner suggested.

In the present invention, as shown in Fig. 4, the projection of the vector, which directs the source supplying device from the heater along the supplying direction, on the plane of the

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substrate is parallel to a line on the plane of the substrate. Notably, the line is a tangent to a point on a circular trace having a circle center the same as the center of the substrate. Furthermore, the heater is located right below the point on the circular trace on the substrate. It is clear that Figure 4 of the present invention fully supports the description of the projection of the vector on the plane of the substrate 20 since Applicants have emphasized in the application that Fig.4 is a top view showing an evaporation apparatus (paragraph [0015]). It is easy to be understood that the arrow labeled as S shown in Fig. 4 is a projection of a vector from the source supplying device 230 to the heater 220 along the supplying direction labeled as S shown in Fig. 3 which is a schematic 3-dimensional view of the evaporation apparatus. Hence, Applicants respectfully submit that no new matter has been introduced into the application by the amendment made herein.

However, none of the cited arts including Hatwar, Connell, Bergfelt, Phinney, Dobson, Nozaki, Tochishita, Vignola and Carpenter teaches that the heater is located right below a point, wherein the point is on a circular trace having a circle center the same as the center of the substrate. Furthermore, none of the cited arts including Hatwar, Connell, Bergfelt, Phinney, Dobson, Nozaki, Tochishita, Vignola and Carpenter suggests that the vector from the heater to the source supply possesses a projection on the plane of the substrate and the projection of the vector should be parallel to the line which is a tangent to a point.

The location relationships between the elements are extremely different from those disclosed in the present invention although each cited art discloses the elements of the present invention. Even though the cited art possess the same elements as those disclosed by the present

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invention, the cited arts and the combination thereof cannot obtain the same features provided by the present invention since the location relationships between the elements disclosed by the cited arts are different from those provided by the present invention.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1 and 7 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-6 and 8-14 patently define over the prior art as well.

The Office Action further rejected claims 2, 3 and 8-10 under 35 U.S.C. 103(a) as being unpatentable over Hatwar taken in view of Yamazaki (U.S. 2003/0010288).

"If an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is non-obvious." *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988). Since claims 2, 3 and 8-10 are dependent claims which further define the invention recited in claims 1 and 7 respectively, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejections 102 and 103. Thus, reconsideration and withdrawal of this rejection are respectively requested.

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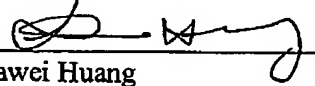
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-14 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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